

# INDEFINITE METRIC SPACES AND QUANTUM FIELD THEORY

*by*

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The lectures will start with a number of examples where spaces with indefinite metric naturally appear in quantum field theory : Lorentzian spacetimes, non-compact Lie groups, Clifford algebras, gauge-field quantization, BRST operators, etc.

Then, the general definition and the main topological properties of indefinite metric spaces will be given.

Finally, the framework will be used to generalize Connes' noncommutative geometry to pseudo-Riemannian manifolds. The machinery will be applied to the standard model of particle physics.